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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,009	07/17/2003	Eric Plante	302/1/031	1661

22462 7590 09/09/2005

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EXAMINER	
GOETZ, PHILIP S	

ART UNIT	PAPER NUMBER
2671	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,009	PLANTE, ERIC	
	Examiner	Art Unit	
	Philip Goetz	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because of a difficulty interpreting Figure 3. Figure 3 boxes 304 and 305, and box 306, show the motion of movement as being left-to right. Boxes 308 through 312 show the same motion as being right-to-left. Also, it is not clear whether there are 4 or 5 frames shown from boxes 308 through 312, or what the vertical line running through the spaceship indicates.

Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1, 7, 13, and 19 recite that "each of said objects is independently

motion-blurred." Paragraph 70 of the specification, which contains a basic description of the innovation, says that "Specifying the shutter length and number of samples for the entire scene 710 according to said prior art would result in identical motion blurring for the first and second spaceships and the ship, when in fact they should have different amounts." Figure 13 shows that specifying the same shutter length, and four samples, for the entire scene, would result in different motion blurring for the first and second spaceships and the ship, in a way that correctly portrays their relative speeds. There is therefore no support in the disclosure for the claimed invention directed to independently motion-blurred objects.

Futhermore, it appears from the specification that the claimed innovation is to be able to specify the shutter length separately for each object in the scene. The language in the claims, "for each of said objects, defining said motion data in response to user input as a shutter length and a motion path within said volume", is insufficiently clear on this point, and could also be interpreted as meaning that for each of said objects, the shutter length is set to a single, previously-entered shutter length.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korein et al. in view of Espinosa-Aguilar et al. These references have been applied to the claims to the extent possible in view of the 112 rejections above.

6. Korein et al. section 3, "Supersampling algorithms", describes the same technique that is described in paragraph 4 of the application as related art. Korein et al. also teaches computing a different fraction of a frame for each object in the scene, according to their rates of motion (section 3, p. 385). Korein et al. do not teach using a different camera exposure length ("shutter speed") for each object in the scene. Espinosa-Aguilar et al., describing 3D Studio Max, a common software application for creating and rendering 3D computer animation, teach the use of compositing in order to process each animated object in a scene differently (p. 1178, "Compositing Basics"). In the next paragraph ("System Performance"), they mention motion blur as one of the processes that one might apply separately to objects using compositing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the compositing operations taught by 3D Studio Max and the motion-blur operations disclosed by Korein et al. in the computer animation system taught by 3D Studio Max, because 3D Studio Max already has several different motion-blur plug-ins, and the operations disclosed by Korein et al. would provide the improvement of reducing aliasing artifacts in the motion blur.

7. In regard to dependent claims 2, 8, 14, and 20, Korein et al. section 2.1, "Determining continuous movement functions", teaches computing interpolation

functions "to define each dynamic attribute value continuously." Hence, as in the applicant's claims, the motion path is defined by a continuous function.

8. In regard to dependent claims 4, 10, 16, and 22, these claims recite "said configuration data for said viewport comprises a view frustum and a focal length." The specification, in particular Figure 7 as described in paragraph 61, indicates that the term "focal length" does not refer to any function of the distance of an object that camera optics bring into focus, but refers to the distance one must travel along said view frustum before encountering a two-dimensional slice of the same size as the screen display. When defined in these terms, any rendering of three-dimensional data on a two-dimensional display with four sides requires specifying a view frustum and a focal length. As such, this limitation is inherent in Korein et al.'s system.

9. In regard to dependent claims 5, 11, 17, and 23, these claims recite "said interval of time is a fraction of a frame." Korein et al. teach (section 3, "Supersampling Algorithms") that "the animation system generates not one, but multiple intensity buffers for a single output frame, each corresponding to a slightly different point in time. The intensities of each pixel in the sequence of buffers form a pixel intensity function which has been digitized at a greater resolution than the output frame rate."

10. Claims 3, 9, 15, and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Korein et al. in view of Espinosa-Aguilar et al. and He et al. Korein et al. and Espinosa-Aguilar teach the limitations in claims 1, 7, 13, and 19. They do not teach the use of a lookup table to store some of the points from a continuous trajectory that an object moves through. He et al. teach the use of a lookup table to store points from a

spline interpolation of a continuous function. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the motion-blur techniques taught in Korein et al. and the compositing technique taught in Espinosa-Aguilar et al. with the lookup table taught in He et al., because the lookup table in He et al. is used to save only that information from the continuous trajectory that will be needed given the pixel resolution required, and because Korein et al. teaches that frames in the temporal domain are analogous to pixels in the spatial domain. Furthermore, the lookup table is a well-known and elementary data structure whose use in this case is not motivated by any advantages, since the important factor with respect to appearance is how the values are computed before being stored, not whether they are pre-calculated or not. Unlike the case in He et al., there do not appear to be any performance advantages in using lookup tables in the applicant's motion-blur technique, since there is no evidence that any of the values computed need be used more than once.

11. Claims 6, 12, 18, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Korein et al. and Espinosa-Aguilar et al. in view of Crow. Claims 6, 12, 18, and 24 recite that "said fraction of a frame is calculated by dividing shutter length by user-defined number." Korein et al. teach (section 3, p. 385) that the number of supersamples per frame, which is the reciprocal of applicant's fraction of a frame, can be computed separately for each object based on the object's speed. Korein et al. do not teach the user simply specifying the number. Crow teaches the use of various arbitrary numbers of supersamples per pixel for visual antialiasing. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to use various arbitrary user-specified numbers of supersamples per frame as taught by Crow, in the combined system of Korein et al and Espinosa-Aguilar et al., because Korein et al. teaches that creating motion blur by supersampling frames in the temporal domain is analogous to antialiasing by supersampling in the spatial domain, and uses Crow as a reference on antialiasing by supersampling in the spatial domain.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Goetz whose telephone number is (571) 272-2910. The examiner can normally be reached on that number from 9AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan, can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Philip Goetz

Date: August 22, 2005

RICHARD HJERPE 8/22/05
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600